NOTES ON THE ANALYSIS OF AGRICULTURAL PRODUCTS.

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[*Abstract.*]

The author described several devices which he has found especially useful in the analysis of certain agricultural products. Desiccation in a current of dry hydrogen may be conveniently accomplished by putting the samples in wide-mouthed weighing-bottles, and setting these in a small copper box, which is closed air-tight by wide corks in the top and is connected by glass tubing with the hydrogen generator. This copper box is heated in the water oven. The latter may be raised to the full temperature of the boiling water by fitting a board into the open side of the oven, inside the ordinary door. A T-tube, with two of the openings sealed and having two to six short upright branches, is very convenient for connecting drying-tubes with an aspirator or with a source of dry hydrogen. The drying-tubes are like short, wide test-tubes with a short piece of glass tubing sealed into the bottom. This tubing is of the same size as that used for the upright branches of the connecting tube. The two are connected by a perforated cork. When necessary, the drying-tube may be closed by a cork bearing a short piece of glass tubing drawn to a small opening.

The author determines the water, ether extract and crude fiber in a single sample of a fodder by drying the substance as above described, inclosing it in smooth filter-paper folded into a sack-like form, extracting with absolute ether, and estimating the fiber in the residue.

The foaming, which usually gives so much trouble when a fodder is boiled with the acid and the alkali in the determination of fiber, may be completely controlled by directing an air-blast upon the surface of the boiling liquid in the Erlenmeyer flask. The blast of air may be obtained by supplying the flask with a suitable jet tube, which is connected directly with a source of compressed air; or, as the flask is connected with an inverted condenser, the blast may be *drawn* in by connecting a pump with the upper end of the condenser.

NOTE.—The substance of the paper of which the above is an abstract will be found in the annual report for 1889, of the Kansas State Agricultural College Experiment Station.

AMMONIA AND NITRIC ACID IN RAIN-WATERS COLLECTED AT THE AGRICULTURAL COLLEGE.

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[*Abstract.*]

The full and complete results upon this subject are contained in the annual report of the Experiment Station of the College for the year 1889. The analytical work has been largely in the hands of Messrs. J. T. Willard and C. M. Breese, of the chemical department of the College.

The rain has been collected in a gauge the five-thousandth part of an acre in area. This gauge has been in use since March 1st, 1886. The water is measured in litres, and a sample taken for analysis.

The first year the nitrogen existing as ammonia and nitric acid was determined at one operation as ammonia by reducing the nitrates to ammonia by a copper-zinc couple made after W. M. Williams's directions, and nesslerized after distillation. Since March 1st, 1887, the ammonia and the nitric acid have been determined sepa-